

Appln No. 09/891,412
Reply to the Office Action dated April 8, 2004

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1. (Currently Amended) A method of producing a silica gel, which comprises;
hydrolyzing a silicon alkoxide, thereby forming a hydrogel; and
subjecting the hydrogel to a hydrothermal treatment substantially without aging the
hydrogel, thereby producing said silica gel having the following characteristics:

- (a) a pore volume ranging from 0.6 to 1.6 ml/g,
- (b) a specific surface area ranging from 300 to 900 m²/g,
- (c) a mode diameter (Dmax) of pores of less than 20 nm,
- (d) a volume of pores having diameters within ± 20 % of Dmax of at least 50 % of the
total pore volume;
- (e) it is amorphous, and
- (f) the content of metal impurities is at most 500 ppm.

Claim 2. (Original) The method for producing a silica gel according to Claim 1, wherein
a hydrogel having a breaking stress of at most 6 MPa is subjected to the hydrothermal treatment.

Claim 3. (Previously Presented) The method for producing a silica gel according to Claim
1, wherein the hydrothermal treatment is carried out at a temperature ranging from 50 to 150°
C for from 1 to 10 hours.

Appln No. 09/891,412

Reply to the Office Action dated April 8, 2004

Claim 4. (Previously Presented) The method for producing a silica gel according to Claim 1, wherein an ammonia water is used for the hydrothermal treatment is conducted in ammonia water.

Claim 5. (Canceled)

Claim 6. (Original) The method for producing a silica gel according to Claim 1, wherein hydrolysis of said silicon alkoxide is conducted in the absence of a template.

Claim 7. (Currently Amended) A silica gel, produced by a process comprising:
hydrolyzing a silicon alkoxide, thereby forming a hydrogel; and
subjecting the hydrogel to a hydrothermal treatment substantially without aging the hydrogel, thereby producing said silica gel having the following characteristics:

(a) a pore volume ranging from 0.6 to 1.6 ml/g.

(b) a specific surface area ranging from 300 to 900 m²/g.

(c) a mode diameter (D_{max}) of pores of less than 20 nm.

(d) a volume of pores having diameters within $\pm 20\%$ of D_{max} of at least 50 % of the total pore volume;

(e) it is amorphous, and

(f) the content of metal impurities is at most 500 ppm.

Claim 8. (Original) The silica gel according to Claim 7, wherein a hydrogel having a breaking stress of at most 6 MPa is subjected to the hydrothermal treatment.

Appln No. 09/891,412

Reply to the Office Action dated April 8, 2004

Claim 9. (Previously Presented) The silica gel according to Claim 7, wherein the hydrothermal treatment is carried out at a temperature ranging from 50 to 150° C for from 1 to 10 hours.

Claim 10. (Previously Presented) The silica gel according to Claim 7, wherein the hydrothermal treatment is conducted in ammonia water.

Claim 11. (Canceled)

Claim 12. (Currently Amended) The silica gel according to Claim ~~11~~ 7, wherein the pore volume ranges from 0.8 to 1.6 ml/g.

Claim 13. (Currently Amended) The silica gel according to Claim ~~11~~ 7, wherein the specific surface area ranges from 400 to 900 m²/g.

Claim 14. (Currently Amended) The silica gel according to Claim ~~11~~ 7, wherein the mode diameter (D_{max}) is at least 2 nm.

Claim 15. (Currently Amended) The silica gel according to Claim ~~11~~ 7, wherein the volume of pores having diameters within $\pm 20\%$ of D_{max} is at least 60 % of the total pore volume.

Claim 16. (Currently Amended) The silica gel according to Claim ~~11~~ 7, wherein the

Appln No. 09/891,412

Reply to the Office Action dated April 8, 2004

content of metal impurities is at most 10 ppm.

Claim 17. (Previously Presented) The silica gel according to Claim 16, wherein the content of metal impurities is at most 1 ppm.

Claim 18. (Currently Amended) The silica gel according to Claim 17, wherein the differential pore volume at the mode diameter (D_{max}) ranges from 5.0 to 12.0 ml/g.

Claim 19. (Currently Amended) The silica gel according to Claim 17, wherein the value of $Q4/Q3$ in solid state Si-NMR is at least 1.3.

Claim 20. (Original) The silica gel according to Claim 7, wherein hydrolysis of said silicon alkoxide is conducted in the absence of a template.

Claim 21. (Currently Amended) The silica gel according to Claim 17, wherein hydrolysis of said silicon alkoxide is conducted in the absence of a template.

Claim 22. (Previously Presented) A silica gel which has the following characteristics:

- (a) a pore volume ranging from 0.6 to 1.6 ml/g,
- (b) a specific surface area ranging from 300 to 900 m²/g,
- (c) a mode diameter (D_{max}) of pores of less than 20 nm,
- (d) a volume of pores having diameters within $\pm 20\%$ of D_{max} of at least 50 % of the total pore volume;

Appln No. 09/891,412

Reply to the Office Action dated April 8, 2004

(e) it is amorphous, and

(f) the content of metal impurities is at most 500 ppm.

Claim 23. (Previously Presented) The silica gel according to Claim 22, wherein the pore volume ranges from 0.8 to 1.6 ml/g.

Claim 24. (Previously Presented) The silica gel according to Claim 22, wherein the specific surface area ranges from 400 to 900 m²/g.

Claim 25. (Original) The silica gel according to Claim 22, wherein the mode diameter (D_{max}) is at least 2 nm.

Claim 26. (Original) The silica gel according to Claim 22, wherein the volume of pores having diameters within $\pm 20\%$ of D_{max} is at least 60 % of the total pore volume.

Claim 27. (Original) The silica gel according to Claim 22, wherein the content of metal impurities is at most 10 ppm.

Claim 28. (Previously Presented) The silica gel according to Claim 27, wherein the content of metal impurities is at most 1 ppm.

Claim 29. (Previously Presented) The silica gel according to Claim 22, wherein the differential pore volume at the mode diameter (D_{max}) ranges from 5.0 to 12.0 ml/g.

Appln No. 09/891,412

Reply to the Office Action dated April 8, 2004

Claim 30. (Original) The silica gel according to Claim 22, wherein the value of Q4/Q3 in solid state Si-NMR is at least 1.3.

Claim 31. (Original) The silica gel according to Claim 22, which is produced by means of a step of hydrolyzing a silicon alkoxide.

Claim 32. (Currently Amended) A method of producing a silica gel, which comprises:
hydrolyzing a silicon alkoxide, thereby forming a hydrogel which has a breaking stress of at most 6 MPa; and

subjecting the hydrogel to a hydrothermal treatment substantially without aging the hydrogel, thereby producing said silica gel having the following characteristics:

(a) a pore volume ranging from 0.6 to 1.6 ml/g.

(b) a specific surface area ranging from 300 to 900 m²/g.

(c) a mode diameter (Dmax) of pores of less than 20 nm.

(d) a volume of pores having diameters within $\pm 20\%$ of Dmax of at least 50 % of the total pore volume;

(e) it is amorphous, and

(f) the content of metal impurities is at most 500 ppm.